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NPIC/TSSG/TPD/EL-632-68
23 May 1968

MEMORANDUM FOR THE RECORD

SUBJECT: Rear Projection Screen Evaluation

1. In response to Memo-NPIC/TSSG/DED-1186-68 [redacted] 25X1 a study was made of a rear projection screen supplied by him. He requested the following:

a. The modulation transfer function
b. The brightness distribution
c. The efficiency
d. The ambient light sensitivity
e. Subjective characteristics such as grainness

2. Tests were performed by EL personnel with the following results:

a. A modulation transfer function analysis could not be made due to time and equipment consideration. In lieu of this solution, tests were made using high contrast targets. When the target was projected on the screen 92 lines/millimeters could be observed. A good quality lens was used, however, it did have some losses such that the actual resolution limit of the screen assuming a high contrast input is probably in the order of 120-130 lines per millimeter. The contact resolution (resolution target in contact with the diffuse side of the screen is in the order of 100 lines/millimeters).

b. Figure 1 depicts the brightness distribution.

c. The gain is approximately 3.

d. The diffusing surface reflects and scatters very little energy back toward the source with the consequence that slight subdued levels of ambient illumination can be tolerated providing that reasonable precautions are taken (specular reflections from the smooth side of the screen could bother the operation).

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e. The screen has a granular appearance which is evident at 7x but even at 30x was not bothersome in observing 90 l/mm imagery. The granules have a presmatic effect such that there is evident coloration but this also was found not to be bothersome.

3. Should further assistance or information be required, please contact [redacted] TSSG/TPD/EL, [redacted] 25X11 25X1

[redacted]

Exploratory Laboratory, TPD

Brightness Distribution